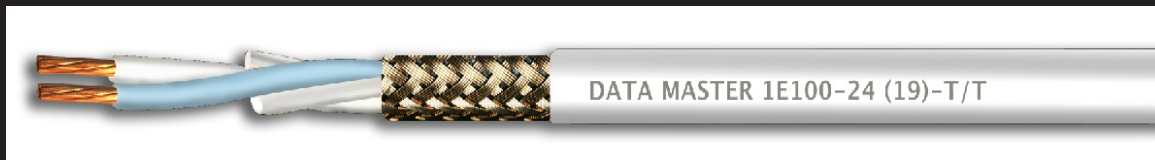




Harbour Industries

Aerospace Data Cable Catalog

Twisted Pair Constructions



Quad Constructions



Composite Designs



High Speed Light Weight Easy to Terminate



Harbour Industries is the preeminent manufacturer of high temperature and high performance cables for the military, aerospace, commercial, and industrial markets. Design and process engineering expertise ensure high quality and uniform products in accordance with customer specifications. Harbour Industries has a wide range of manufacturing processes with large scale production operations and “First-in-Class” customer service.

Through the use of special materials and innovative construction techniques, Harbour offers Aerospace Data Cables that are lighter weight and high speed. Twisted Pair, Quad, and Composite Data Master® cables described in this catalog represent just a few of the cables offered.

Harbour created their Data Master® cable product line because high performance versions of commercial network cables were needed for commercial and military aviation application. Commercial network standards needed to be followed - - Category 5, 5e, 6, and 6e, USB, and IEEE1394 to name a few. The challenge was to design cables for avionics systems and still meet all of the commercial performance characteristics. Harbour met the challenge with their Data Master® Cables.

Harbour’s Aerospace Data Cables are now being used in numerous applications in the commercial and military aircraft and military land based vehicles.

Harbour is an ISO 9001-2000 manufacturer with facilities that are fully compliant to the directives of RoHS, DFARS, WEEE, ELV and BFR.



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Data Master® Aerospace Cable

Twisted Pair Designs



Physical Construction

Designs consist of one pair through five pair configurations with a temperature range from -55°C to +200°C. Typical gauge sizes consist of 22, 24 and 26 AWG, although other gauge sizes are available. A variety of dielectric materials are available including foam and solid extruded FEP, solid/foam composite, and low density PTFE tapes - all designed for superior electrical performance.

Electrical Characteristics

100 Ohm and 150 Ohm impedances are standard. Frequencies typically range from 10 MHz to 1000 MHz, but some cables are designed for operation up to 2 GHz.

Applications

Some constructions have been designed for the commercial aviation market with applications such as intra-plane communications and Internet access. Other constructions have been designed for high reliability commercial and military applications such as on-board instrumentation and sensing.

Physical Characteristics

Part Number	Conductor Diameter	Dielectric Diameter	Diameter over 1st braid	Diameter over 2nd braid	Cable Diameter	Temp. Rating	Weight (lbs/mft)
1E100-24(19)T	.0234" SPCA	.047"	.121" TPC		.141"	150°C	17
2E100-24(19)TT	.0234" SPCA	.061"	.128" TPC	.256" TPC	.276"	150°C	35
M17/176-00002	.0235" SPCA	.042"	.100" SPC	-	.129"	230°C	18

Electrical Characteristics

Part Number	Impedance (ohms)	Cap. (pF/ft)	Attenuation (dB/100 ft) @					
			10 MHz Typ/Max	100 MHz Typ/Max	250 MHz Typ/Max	531 MHz Typ/Max	750 MHz Typ/Max	1062 MHz Typ/Max
1E100-24(19)SP	100	12.7	2.0/2.3	6.8/7.5	10.9/12.0	17.3/19.1	21.3/23.5	26.5/29.2
2E100-24(19)SP	100	12.7	2.0/2.3	6.8/7.5	10.9/12.0	17.3/19.1	21.3/23.5	26.5/29.2
M17/176-00002	77	18.8	4.1/4.5	15.4/17.0	18.0/19.8	24.4/26.9	28.9/31.8	39.7/43.7

Additional constructions available - check with the factory for details
All figures referenced are nominal

Data Master® Aerospace Cable Quad Designs



- Lightweight for high speed airborne data applications
- Silver plated and silver plated alloy conductors with silver or tin plated copper braids
- 100 and 150 ohm impedance, 150°C and 200°C rated, tested to 1 GHz
- Supports Gigabit Ethernet, FDDI, USB, and 1394 standards
- Easy termination, non-shrinkback insulation, fits standard connectors

Physical Characteristics

Part Number	Conductor Diameter	Dielectric Diameter	Diameter over foil	Diameter over 1st braid	Diameter over 2nd braid	Cable Diameter	Temp. Rating	Weight (lbs/mft)
Q100-22(19)TT	.0295" SPC	.053"	-	.153" TPC	.169" TPC	.189"	150°C	29
Q100-24(19)TT	.0234" SPCA	.045"	.125"		.140" TPC	.161"	150°C	22
Q100-26(19)TT	.0187" SPCA	.038"	.105"		.120" TPC	.137"	150°C	18
Q150-22(19)FT	.0295" SPC	.085"	.238"		.254" TPC	.274"	105°C	45
Q150-24(19)FT	.0234" SPCA	.072"	.190"		.206" TPC	.226"	105°C	33
Q150-26(19)FT	.0187" SPCA	.054"	.148"		.164" TPC	.184"	105°C	22
Q150-22(19)SS	.0295" SPC	.085"	-	.263" SPC	.279" SPC	.299"	200°C	57
Q150-24(19)SS	.0234" SPCA	.072"	-	.211" SPC	.227" SPC	.247"	200°C	43
Q150-26(19)SS	.0187" SPCA	.054"	-	.160" SPC	.176" SPC	.196"	200°C	28
Q150-24(19)KT	.0234" SPCA	.072"	.190"	-	.206" SPC	.226"	200°C	33

Electrical Characteristics

Part Number	Impedance (ohms)	Cap. (pF/ft)	Attenuation (dB/100 ft) @					
			10 MHz Typ/Max	100 MHz Typ/Max	250 MHz Typ/Max	531 MHz Typ/Max	750 MHz Typ/Max	1062 MHz Typ/Max
Q100-22(19)TT	100	12.7	1.7/2.0	4.9/5.3	7.5/8.3	12.2/12.8	15.5/16.5	19.0/20.4
Q100-24(19)TT	100	12.7	2.3/2.7	8.0/9.2	11.4/13.1	20.5/23.6	27.7/31.9	36.5/42.0
Q100-26(19)TT	100	12.7	2.8/3.2	9.6/11.0	13.7/15.8	24.6/28.3	33.3/38.3	43.8/50.3
Q150-22(19)FT	150	8.5	1.1/1.4	3.1/3.6	4.9/5.6	7.5/8.6	10.0/11.5	12.0/13.8
Q150-24(19)FT	150	8.5	1.5/1.9	4.5/5.5	7.1/8.2	11.2/12.9	14.2/16.4	17.2/19.8
Q150-26(19)FT	150	8.5	1.7/1.9	5.8/6.4	8.7/9.6	13.8/15.2	17.8/19.6	21.0/23.1
Q150-22(19)SS	150	8.5	1.1/1.4	3.1/3.6	4.9/5.6	7.5/8.6	10.0/11.5	12.0/13.8
Q150-24(19)SS	150	8.5	1.5/1.9	4.5/5.5	7.1/8.2	11.2/12.9	14.2/16.4	17.2/19.8
Q150-26(19)SS	150	8.5	1.7/1.9	5.8/6.4	8.7/9.6	13.8/15.2	17.8/19.6	21.0/23.1
Q150-24(19)KT	150	8.5	1.5/1.9	4.5/5.5	7.1/8.2	11.2/12.9	14.2/16.4	17.2/19.8

Additional constructions available - check with the factory for details
All figures referenced are nominal

Data Master® Aerospace Cable Composite Designs

Harbour's composite aerospace cables consist of conductors for both signaling and for power. Because only a single cable needs to be installed, the composite cable design contributes to reduced cost, downsizing, high reliability and higher safety. Various shielding configurations are available depending on the application.

Physical Characteristics

Part Number	Conductor Diameter	Dielectric Diameter	Diameter over foil	Diameter over 1st braid	Diameter over 2nd braid	Cable Diameter	Temp. Rating	Weight (lbs/mft)
USB 90-26/22S	.0187" SPCA	.047"	-	.176" SPC	-	.200"	150°C	29
1394-110-24/SS	.0150" SPCA	.050"	.106"	-	.122" SPC	.250"	150°C	40

Electrical Characteristics

Part Number	Impedance (ohms)	Cap. (pF/ft)	Attenuation (dB/100 ft) @					
			10 MHz Typ/Max	100 MHz Typ/Max	250 MHz Typ/Max	531 MHz Typ/Max	750 MHz Typ/Max	1062 MHz Typ/Max
USB 90-26/22S	90	13.0	3.5/4.0	12.2/14.6	23.2/26.6	37.0/42.5	46.6/53.6	59.7/68.6
1394-110-24/SS	110	11.5	1.9/3.2	6.5/7.2	10.4/11.5	16.7/18.4	20.3/22.5	25.3/28.0

Additional constructions available - check with the factory for details
All figures referenced are nominal

Data Master® High Speed Data Cables

- ◇ Lightweight twisted pair and quad cables for high speed airborne data applications
- ◇ Precision impedance shielded pairs and overall shielding for exceptional EMI protection
- ◇ Various combinations of high temperature dielectric insulations are used
- ◇ Cables are easy to terminate and able to be laser marked

Part Number	Center Conductor	Insulation Diameter	Foil Diameter	Braid 1 Diameter	Braid 2 Diameter	Final Diameter	Temp Rating	Weight (lbs/mft)
Quad Cables								
Q100-22(19)TT	.0295" SPC	.053"	-	.153" TPC	.169" TPC	.189"	150°C	29
Q100-24(19)TT	.0234" SPCA	.045"	.125"		.140" TPC	.161"	150°C	22
Q100-26(19)TT	.0187" SPCA	.038"	.105"		.120" TPC	.137"	150°C	18
Q150-22(19)FT	.0295" SPC	.085"	.238"		.254" TPC	.274"	105°C	45
Q150-24(19)FT	.0234" SPCA	.072"	.190"		.206" TPC	.226"	105°C	33
Q150-26(19)FT	.0187" SPCA	.054"	.148"		.164" TPC	.184"	105°C	22
Q150-22(19)SS	.0295" SPC	.085"	-	.263" SPC	.279" SPC	.299"	200°C	57
Q150-24(19)SS	.0234" SPCA	.072"	-	.211" SPC	.227" SPC	.247"	200°C	43
Q150-26(19)SS	.0187" SPCA	.054"	-	.160" SPC	.176" SPC	.196"	200°C	28
Q150-24(19)KT	.0234" SPCA	.072"	.190"	-	.206" SPC	.226"	200°C	33
Twisted Pairs								
1E100-24(19)T	.0234" SPCA	.047"		.121" TPC		.141"	150°C	17
2E100-24(19)TT	.0234" SPCA	.061"		.128" TPC	.256" TPC	.276"	150°C	35
M17/176-00002	.0234" SPCA	.042"	-	.100" SPC	-	.129"	230°C	18
Composite Cables								
USB 90-26/22S	.0187" SPCA	.047"	-	.176" SPC	-	.200"	150°C	29
1394-110-24/SS	.0150" SPCA	.050"	.106"	-	.122" SPC	.250"	150°C	40

Additional constructions available - check with the factory for details
All figures referenced are nominal

Data Master® High Speed Data Cables



			Attenuation (dB/100 ft)					
Part Number	Impedance (ohms)	Capacitance (pF/ft)	10 Mhz Typ/Max	100 Mhz Typ/Max	250 Mhz Typ/Max	531 Mhz Typ/Max	750 Mhz Typ/Max	1062 Mhz Typ/Max
Quad Cables								
Q100-22(19)TT	100	12.70	1.7/2.0	4.9/5.3	7.5/8.3	12.2/12.8	15.5/16.5	19.0/20.4
Q100-24(19)TT	100	12.70	2.3/2.7	8.0/9.2	11.4/13.1	20.5/23.6	27.7/31.9	36.5/42.0
Q100-26(19)TT	100	12.70	2.8/3.2	9.6/11.0	13.7/15.8	24.6/28.3	33.3/38.3	43.8/50.3
Q150-22(19)TT	150	8.5	1.1/1.4	3.1/3.6	4.9/5.6	7.5/8.6	10.0/11.5	12.0/13.8
Q150-24(19)TT	150	8.5	1.5/1.9	4.5/5.5	7.1/8.2	11.2/12.9	14.2/16.4	17.2/19.8
Q150-26(19)TT	150	8.5	1.7/1.9	5.8/6.4	8.7/9.6	13.8/15.2	17.8/19.6	21.0/23.1
Q150-22(19)SS	150	8.5	1.1/1.4	3.1/3.6	4.9/5.6	7.5/8.6	10.0/11.5	12.0/13.8
Q150-24(19)SS	150	8.5	1.5/1.9	4.5/5.5	7.1/8.2	11.2/12.9	14.2/16.4	17.2/19.8
Q150-26(19)SS	150	8.5	1.7/1.9	5.8/6.4	8.7/9.6	13.8/15.2	17.8/19.6	21.0/23.1
Q150-24(19)KT	150	8.5	1.5/1.9	4.5/5.5	7.1/8.2	11.2/12.9	14.2/16.4	17.2/19.8
Twisted Pairs								
1E100-24(19)T	100	12.7	2.0/2.3	6.8/7.5	10.9/12.0	17.3/19.1	21.3/23.5	26.5/29.2
2E100-24(19)TT	100	12.7	2.0/2.3	6.8/7.5	10.9/12.0	17.3/19.1	21.3/23.5	26.5/29.2
M17/176-00002	77	18.8	4.1/4.5	15.4/17.0	18.0/19.8	24.4/26.9	28.9/31.8	39.7/43.7
Composite Cables								
USB 90-26/22S	90	13.0	3.5/4.0	12.2/14.6	23.2/26.6	37.0/42.5	46.6/53.6	59.7/68.6
1394-110-24/SS	110	11.5	1.9/3.2	6.5/7.2	10.4/11.5	16.7/18.4	20.3/22.5	25.3/28.0

Additional constructions available - check with the factory for details
All figures referenced are nominal



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